Utah Patient Safety Update

Utah Department of Health
Utah Hospitals & Health Systems Association
HealthInsight

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From the Editor: Sentinel Events and Misadventures

By Carol Masheter

This issue includes contributions on sentinel events and misadventures from patient safety partners representing several organizations. Misadventures may be a "fertile hunting ground" for potential reportable sentinel events and other adverse events that result in serious harm to patients due to medical care.

Information in this issue provides a context for future statewide patient safety activities, such as HealthInsight's sentinel event forum on November 4 (see Page 8), development of correct surgery site guidelines and prevention of high-risk drug adverse events. It also can assist health care systems and hospitals improve the quality of care to their patients.

For definitions of sentinel events and misadventures, see Page 4.

Utah Correct Surgery Site Survey Results

By Iona Thraen and Jill Vicory

Results from this survey show considerable variation in practices for marking surgery sites on patients throughout Utah. See Page 6.

State-Level Sentinel Event Information 2001-2004

By Linda Lange

An overview of de-identified sentinel events may help prevent future sentinel events. The Utah Department of Health (UDOH) has received 108 sentinel event reports since October 15, 2001, the start date for required sentinel event reporting. See Page 2.

UHA ADE User Group News: Prevention of High-Risk Drug Adverse Events

By Linda Tyler

This group is working on preventing adverse drug events by looking at three high-risk drug categories, starting with anticoagulants. See Page 5.

High-Risk Drug Alert: Heparin Induced Thrombocytopenia

By Michelle Wheeler

Two forms of thrombocytopenia, HAT and HIT, are associated with heparin products. HIT, though rarer, can be life threatening. See Page 6.

Misadventures 2001-2003

By Carol Masheter

Three-year trend data show both the number and rate of misadventures in Utah. See Page 4.

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State-Level Sentinel Events Information

From October 15, 2001 to July 15, 2004, the Utah Department of Health (UDOH) received reports of 108 sentinel events in Utah's acute care hospitals and ambulatory surgery centers.

Figure 1

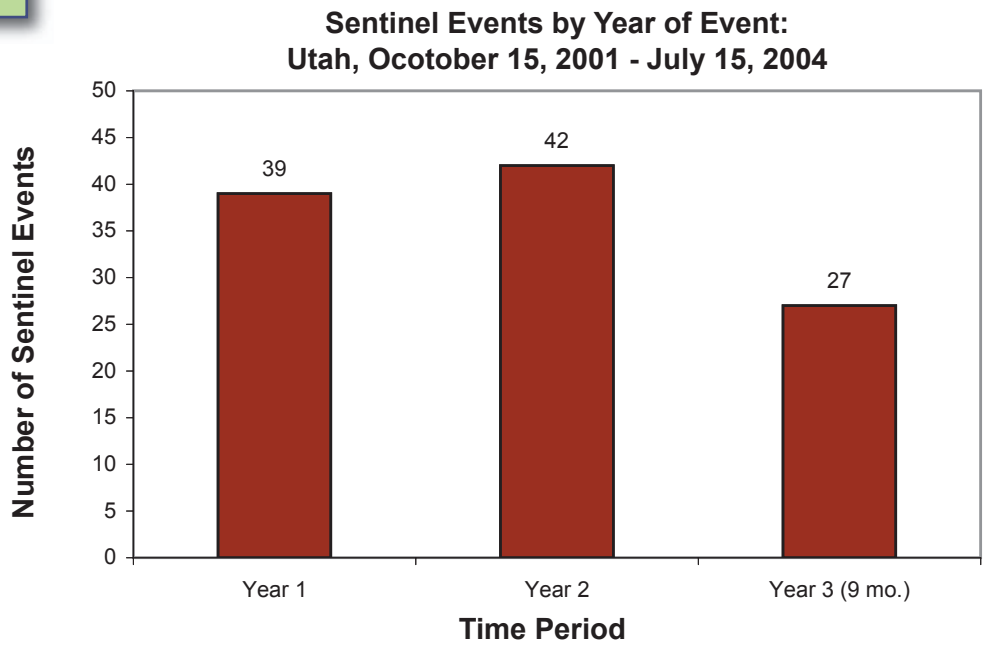

Figure 1 shows the number of sentinel event by year. The annual number has been approximately 40 sentinel events per year.

Figure 2

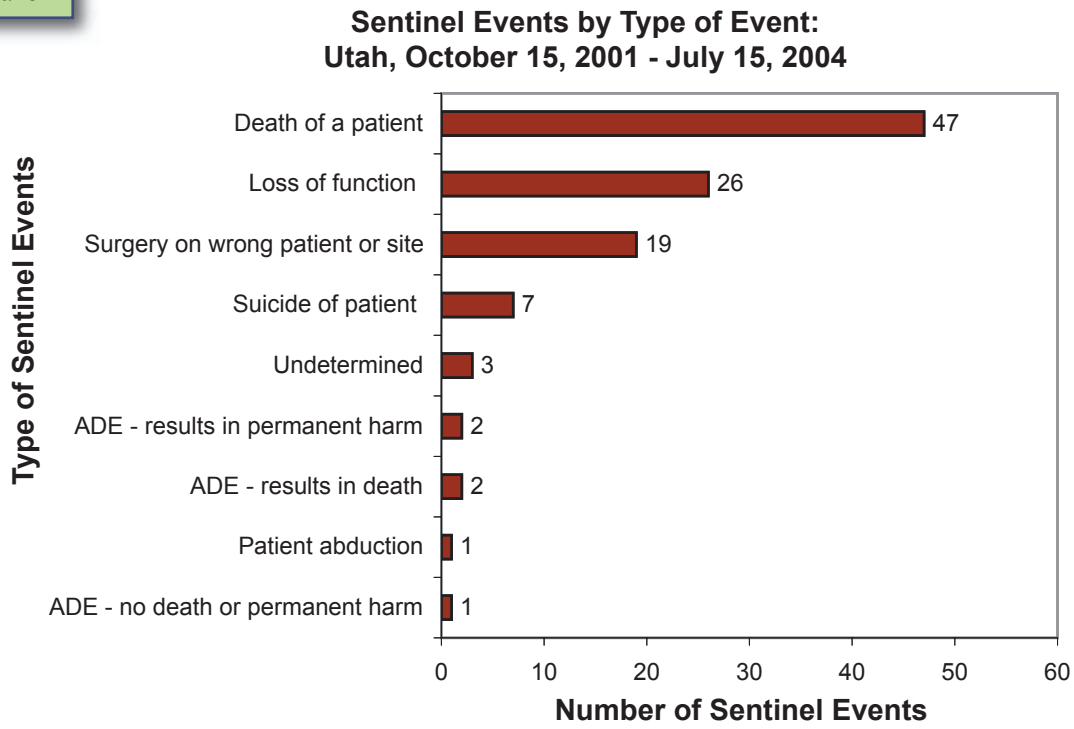

Figure 2 shows the number of sentinel events by type of event. Death of a patient was the most common (N=47), followed by loss of function (N=26) and surgery on wrong patient or wrong site (N=19). The remaining 35 sentinel events fell into six additional groups.

Figure 3

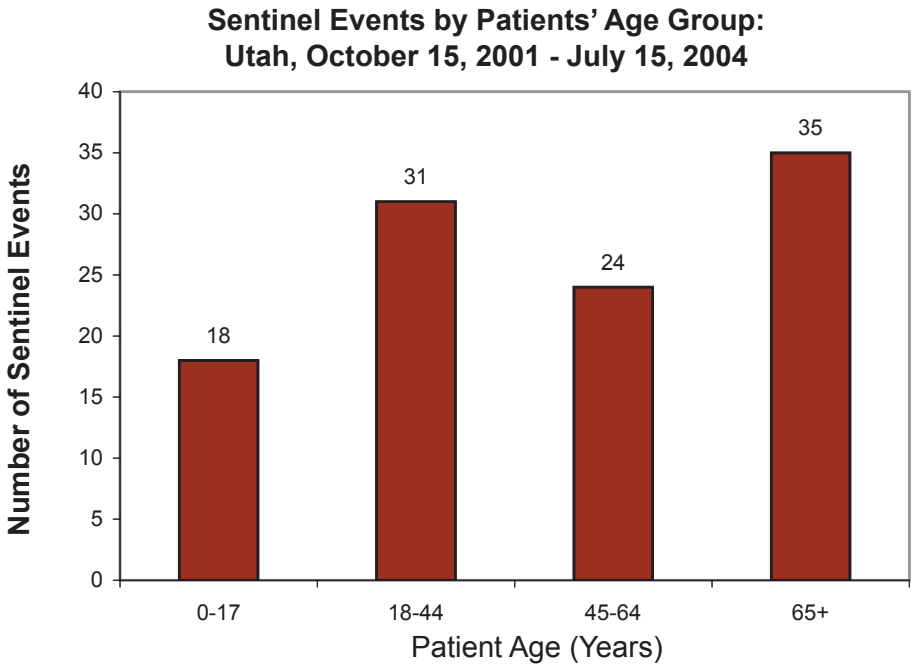

Figure 3 shows sentinel events by patients' age group. The largest number of sentinel events is among older patients (65 or more years of age, N=35), followed by younger adult patients (18 to 44 years of age, N=31, and 45 to 65 years of age, N=24.) The lowest number of sentinel events is among pediatric patients (0 to 17 years of age, N=18.)

Figure 4

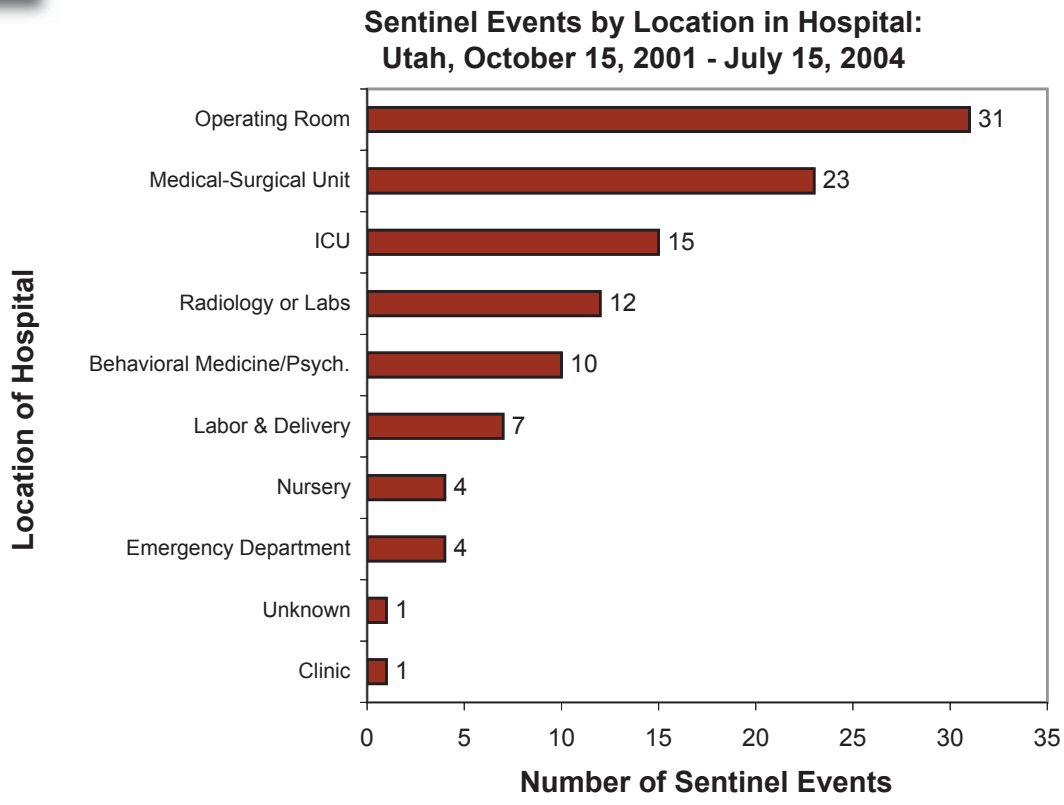

Figure 4 shows number of sentinel events by location in the hospital. The largest number of sentinel events occurred in the operating room (N=31), followed by the medical-surgical unit (N=23) and the ICU N=15).

MISADVENTURES 2001-2003

Definitions: Misadventures, or harm to patients mostly likely due to medical care, can include sentinel events, though all misadventures are not necessarily sentinel events. Sentinel events are usually among the highest harm misadventures, such as death and serious or permanent harm to patients. For the definition of sentinel events that must be reported and other kinds of adverse events, see http://health.utah.gov/psi/rules.htm.

Coding and Classification: Misadventures were detected in the Utah Hospital Discharge Database using a classification scheme validated by the project's expert panel for the ICD-9-CM Classification of Adverse Events, 2002. The scheme designates a set of 66 ICD-9-CM codes (including diagnosis codes and E-codes) as misadventures codes. These 66 ICD-9-CM codes are grouped into seven classes of similar codes (see Table 1).

Table 1

STATE-LEVEL DATA FOR 41 ACUTE CARE HOSPITALS
NUMBER OF INPATIENT DISCHARGES BY YEAR AND BY ICD-9-CM CLASS OF
MISADVENTURES AND OTHER SPECIFIED PROCEDURE COMPLICATIONS, 2001-2003

MISADVENTURE CODES AND CLASSES	2001	2002	2003
Any misadventure	1,119	1,198	1,097
998.2, E870.0-E870.9 Accidental puncture or laceration	1,057	1,128	1,041
998.4,998.7, E871.0-E871.9 Foreign body left in body	20	28	17
E872.0-E872.9 Failure of sterile precautions	0	2	1
E873.0-E873.9 Excessive amount, dosage, radiation, etc.	2	3	4
E874.0-E874.9 Mechanical failure	5	6	5
E875.0-E875.9 Contaminated substance	1	3	1
E876.0-E876.9 Wrong fluid, surgical site, etc.	38	35	29
Total inpatient discharges for the year	239,818	246,807	253,273

SOURCE: Utah Hospital Discharge Database, 2001 - 2003, Utah Department of Health.

Table 2

STATE-LEVEL DATA FOR 41 ACUTE CARE HOSPITALS
PERCENTAGE OF INPATIENT DISCHARGES BY YEAR AND BY ICD-9-CM CLASS OF
MISADVENTURES AND OTHER SPECIFIED PROCEDURE COMPLICATIONS, 2001-2003

MISADVENTURE CODES AND CLASSES	2001	2002	2003
Any misadventure	0.467	0.485	0.433
998.2, E870.0-E870.9 Accidental puncture or laceration	0.441	0.457	0.411
998.4,998.7, E871.0-E871.9 Foreign body left in body	0.008	0.011	0.007
E872.0-E872.9 Failure of sterile precautions	0.000	0.001	0.000
E873.0-E873.9 Excessive amount, dosage, radiation, etc.	0.001	0.001	0.002
E874.0-E874.9 Mechanical failure	0.002	0.002	0.002
E875.0-E875.9 Contaminated substance	0.000	0.001	0.000
E876.0-E876.9 Wrong fluid, surgical site, etc.	0.016	0.014	0.011
Total inpatient discharges for the year	239,818	246,807	253,273

SOURCE: Utah Hospital Discharge Database, 2001 - 2003, Utah Department of Health.

Note: The ICD-9-CM code, E876.5 for "performance of inappropriate operation," is the correct code for wrong site or wrong patient surgery. However, only one discharge in 2001 included this code and no discharges included it for 2002 or 2003 (not shown in the above tables), whereas 11 sentinel events with wrong surgery or wrong patient were reported in the first two years (2001 and 2002, not shown in sentinel events charts) of required sentinel event reporting. This discrepancy suggests that the code E8765 may be under used.

The majority of misadventures (about 95%) are accidental lacerations or perforations during medical procedure that vary in severity of harm to patients.

Figure 5

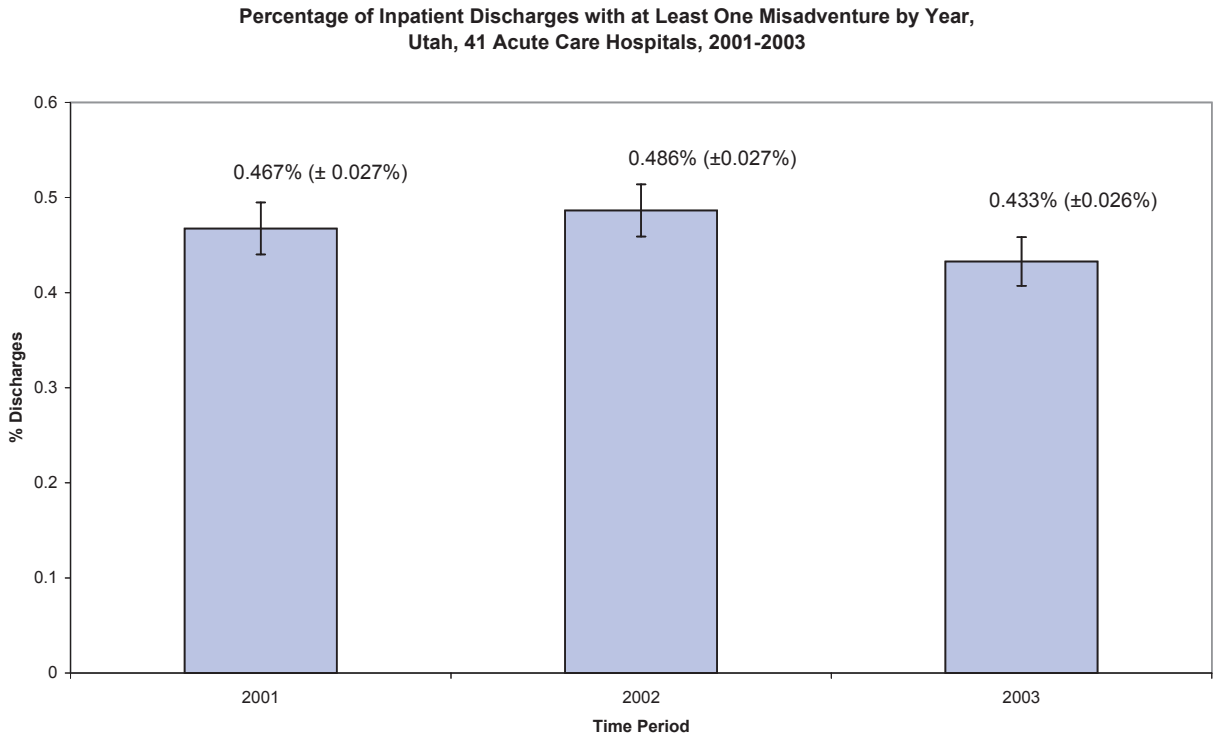

Figure 5 shows a relatively steady rate of misadventures over the three-year period from 2001 through 2003. Using 95% confidence intervals as the criterion for statistical significance, no differences are statistically significant.

Prevention of High Risk Drug Adverse Events

The Utah Hospitals and Health Systems Association Adverse Drug Event Users Group is working on preventing adverse drug events by looking at three high-risk drug categories, starting with anticoagulants. The Users Group is starting with anticoagulants. The project involves doing a proactive risk assessment using failure mode effects analysis (FMEA). Using this process, the Users Group has identified the steps in the process and potential problems that occur. The next steps will be to identify the reasons for the problems, consequences, and potential actions to help prevent harm. When the project is completed, the outcomes will be a template that any organization can use to analyze potential risk in their system.

A numerical rating scale can be applied to help assess the high priority items specific for an organization. This is an exciting project since it offers the opportunity for organizations to help prevent problems, and ultimately patient harm. Since JCAHO accredited organizations are required to do FMEA, it is hoped that many organizations will select high-risk drugs as an area to examine. The outcomes of this project will help facilitate this process for any organization.

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Drug Alert: Heparin Induced Thrombocytopenia

Heparin-associated thrombocytopenia (HAT) is a mild drop in platelets (approximately 100,000 – 130,000/mm^3) that occurs soon after the start of heparin (within 1 to 4 days) and will resolve spontaneously. It is a direct interaction with heparin and platelets and is not associated with antibody formation. HAT occurs in about 25% of patients on heparin.

Heparin-induced thrombocytopenia (HIT) is a rarer, but potentially life-threatening thrombocytopenia associated with antibodies binding to heparin-platelet factor 4 complexes that can cause both thrombocytopenia and thrombosis. The platelets drop more precipitously (usually <100,000/mm^3 or 50% of baseline) than with HAT and occurs several days after initiation of therapy. In approximately 25-50% of HIT patients, a thrombotic syndrome also can occur. Unfractionated heparin (UFH) is 8 to 10 times more likely to cause HIT than low-molecular weight heparins (LMWHs). However, once a patient is diagnosed with HIT due to UFH, the cross-reactivity of LMWHs is approximately 70-80%. Therefore, LMWHs cannot be used as substitutes for UFH once a patient is diagnosed with HIT. Treating HIT is essential due to the high risk of thrombotic events. Once a patient has been diagnosed with HIT, all heparin products including flushes and heparin-coated catheters must be discontinued. Anticoagulant therapy is needed due to the high risk of thrombosis associated with HIT.

Warfarin alone is not appropriate in patients with HIT. Warfarin is thought to potentiate thrombosis by initially decreasing levels of the pro-coagulants, protein S and C. Therefore, treatment of HIT requires injectable non-heparin products including direct thrombin inhibitors or pentasaccharides, in conjunction with warfarin. HIT is a complex and devastating side effect of UFH and, at a much lower rate, LMWHs. Clinical monitoring and treatment of HIT is imperative to prevent re-exposure of heparin products, long-term complications, and death.

References:
1. Dager WE, White RH. Treatment of heparin-induced thrombocytopenia. Pharmacotherapy 2002;36:489-503.
2. Warkentin TE, Levine MN, Hirsh J, et al. Heparin-induced thrombocytopenia in patients treated with low-molecular-weight heparin or unfractionated heparin. N Engl J Med. 1995 May 18;332(20):1330-5.
3. Deitcher, SR. Heparin-induced thrombocytopenia: pathogenesis, management, and prevention. Formulary 2001;36:26-41.

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Utah Correct Surgery Site Survey Results

From October 15, 2001 to July 15, 2004, the Utah Department of Health (UDOH) received reports that identified 109 sentinel events in Utah's acute care hospitals and ambulatory surgery centers. Of these 108 sentinel events, 19 were wrong site or wrong patient surgeries. According to Richard Labasky, MD, President of the Utah Medical Association (UMA), these wrong site and wrong patient surgeries can be prevented.

A statewide initiative to improve correct surgery site practices has begun, including a review of surgery site marking practices. In this review, UDOH received information from 91% of acute care hospitals and 90% of ambulatory surgery centers. Variation was found in:

- Marking surgery sites
- Verification checklists
- Review of informed consent
- Review of imaging studies
- Timeouts

(Continued on next page)

Variation in surgery site marking includes:

- Who marks the surgery site (11 different staff roles)
- How the site is marked (12 different ways)
- Where the site is marked (9 different places)
- When the site is marked (7 different times)
- Devices used to mark the site (6 different devices)

Recognizing that a large number of physicians and healthcare staff work in more than one location, hospitals and surgery centers in Utah have agreed to adopt nationally supported guidelines developed by the Joint Commission of the Accreditation of Healthcare Organizations (JCAHO) for an official time out program. According to Joseph Krella, CEO of the Utah Hospitals and Health Systems Association (UHA), "Utah is working to set a standard on how to mark a procedure site and who should be responsible for marking it. But until those standards are in place, we can all agree to take a time out in the interest of patient safety." "Time out" means that before any surgery can begin, the entire team stops what they are doing and verifies that the correct surgery is being performed on the correct site on the correct patient. UDOH, UHA, the Utah Medical Association (UMA), HealthInsight, the Association of periOperative Registered Nurses (AORN) and the Utah Organization of Nurse Leaders, as well as all Utah hospitals and ambulatory surgery centers, want to encourage patients to be part of the team to improve patient safety. Patients and their loved ones should feel comfortable asking questions about the surgery as well as how the surgery site will be marked and the facility's time out policy.

According to Krella, "Patient safety is a top priority for all health care organizations in Utah. In a very competitive health care market, this is one area where the competition ends and we have started working together to ensure what is best for the patient."

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Thanks!

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The Consortium includes the following members:

Utah Department of Health
HealthInsight
UHA, Utah Hospitals and Health Systems Association
University of Utah, Department of Medical Informatics
LDS Hospital, Intermountain Health Care
Missouri Department of Health and Senior Services
Missouri Patient Care Review Foundation
University of Missouri-Columbia, School of Medicine

This report was prepared by Carol Masheter, Paul Hougland and Lori Brady. We wish to thank all contributors for their articles in this issue.

For more information about this project, contact Carol Masheter at (801) 538-6355 or HealthCareStat@utah.gov.

Announcements

What:

Sentinel Events User Group:
Lessons Learned, Disasters Survived

Where:

Hilton Salt Lake City Center
255 S. West Temple
Salt Lake City, Utah

When:

November 9, 2004,
3:30-5:30 PM
(following Designing Systems for Quality and Safety, Session 5)

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PATIENT SAFETY

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